

REMARKS

Claims 6, 10, 15-18 are pending. New claims 17 and 18 are added.

Claim 10 was rejected under 35 USC §103(a) as being unpatentable over Loh et al. This rejection is respectfully traversed.

Loh et al. teaches a local nitrogen implantation with, for example, an implant dose of 10^{15} atoms per square centimeters and an energy of 60 KeV and tilted angle of 45 degrees. Although claim 10 sets forth an acceleration voltage not exceeding 10 KeV with a dose of $1\text{-}3 \times 10^{14}\text{cm}^{-2}$, the Examiner argues that this limitation would have been obvious since Loh et al. teaches that the nitrogen implantation can be optimized.

Although the Examiner has highlighted the disclosure at column 3, lines 13-30, it is noted that the sentence bridging columns 1 and 2 of Loh et al. sets forth a specific implant dose of approximately 10^{15} to 10^{16} atoms per square centimeter and an energy of approximately 30 KeV to 60 KeV, well above the ranges set forth in claim 10. As such, it would not appear that one of ordinary skill in the art would have “optimized” Loh et al.’s invention to the claimed range.

As set forth in page 11, lines 20-30, the present invention achieves the effect of no substantial change occurs in the threshold characteristic or flat-band characteristic of the MOS transistor even when the N atoms are introduced into the gate oxide film 13 because incorporation of the N atoms does not occur in the part of the gate oxide film 13 located immediately underneath the gate electrode 14A and covering the channel region.

Loh et al. describes in column 3, lines 29-30 that “the length of the drain gate overlap regions incorporating nitrogen as approximately 900 Angstroms.” Thus, Loh et al. cannot achieve the effect of the present invention. Furthermore, Loh et al. is entirely silent about the problem of threshold characteristics or flat-band characteristics of the semiconductor device.

Claim 17 and 18 have been added. Claim 17 is supported by Fig. 7C whereas claim 18 is supported by Fig. 6.

For at least the foregoing reasons, the claimed invention distinguishes over the cited art and defines patentable subject matter. Favorable action on the merits is earnestly solicited.

Should the Examiner deem that any further action by applicant would be desirable to place the application in better condition for allowance, the Examiner is encouraged to telephone applicant's undersigned attorney.

U.S. Patent Application Serial No. 09/428,052

In the event that this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 50-2866.

Respectfully submitted,

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